Journal of Molecular Liquids 214 (2016) 231–237

Contents lists available at ScienceDirect

Journal of Molecular Liquids

journal homepage: www.elsevier.com/locate/molliq

Synthesis and characterization of azobenzene-based gold nanoparticles for photo-switching properties

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ARTICLE INFO

Article history:
Received 19 September 2015
Received in revised form 21 December 2015
Accepted 22 December 2015
Available online 6 January 2016

Keywords:
Photoisomerisation
Gold nanoparticles
Cis–trans isomerization
Photoswitching

ABSTRACT

A series of new azobenzene based thiolated liquid crystals modified with gold nanoparticles were synthesized and characterized using a different mode of delegated tools e.g. FTIR, NMR and FESEM–EDX measurements for the structural properties of synthesized compounds. Polarized optical microscopy studies have revealed all the studied compounds having liquid crystalline properties, as a typical nematic phase. These liquid crystal capped gold nanoparticles' size was determined by TEM experiment. In addition, azobenzene-based gold nanoparticles containing flexible spacers showed photochromic behavior upon UV irradiation. These molecules exhibited strong photoisomerisation behavior in solutions and their *trans* to *cis* isomerisation took about 44 s whereas the reverse process almost took place ranging from 82 to 125 min.